Continued from 14(4):233-252

25. *Dismorphia (Acmepteron) nemesis* (Latreille)

SPECIMENS: 2♂♂, 2♀♀; 3,400-4,800 feet; 26 Aug.-30 Oct.

As the preceding species, *D. nemesis* is local in distribution and uncommon in abundance, being found principally in the Montane Thicket and Elfin Woodland on Volcán San Martín Tuxtla (although one specimen was taken on Volcán Santa Marta). The behavior is similar to that of *D. euryope*. The body fluids smelled sour.

26. *Dismorpha (Enantia) albania* (Bates)

SPECIMENS: 2♂♂, 2♀♀; 700-1,800 feet; 14 July-25 Sept.

This pierid is uncommon; two specimens were taken in a coffee finca within the Semi-Evergreen Seasonal Forest and the other two along a margin of the Lower Montane Rain Forest. The flight is similar to that of *D. euryope* and *D. nemesis*. The body fluids smelled sour.

27. *Dismorphia (Enantia) jethys* (Boisduval)

SPECIMENS: 12♂♂, 1♀; 4,800-5,200 feet; 30 March-16 May.

E. jethys is locally abundant and found only above the canopy of the Elfin Woodland during the spring months. The flight is that of a typical pierid—rather rapid and erratic. The butterflies are attracted to flowers of the composite *Shistocarpha* sp. The body fluids of pinched specimens smelled sour.

SUBFAMILY Pierinae

28. *Catasticta nimbice nimbice* (Boisduval)

SPECIMENS: 7♂♂, 11♀♀; 1,100-5,100 feet; 9 Feb.-30 Oct.

This species is locally abundant along the margins of the Lower Montane Rain Forest, Montane Rain Forest, Semi-Evergreen Seasonal Forest, and above the canopy of the Elfin Woodland. The flight is rather rapid, erratic, and usually of short duration, the butterflies alighting frequently on leaves ten to 15 feet above the ground. Only rarely was one individual encountered at a locality; thus, the species appears to be colonial. The body fluids of pinched specimens had a sour odor.

29. *Archonias (Archonias) tereas* (Hübner)

SPECIMENS: 3♂♂, 1♀; 1,000-2,450 feet; 4 Sept.-18 Nov.

Archonias tereas is locally common and found primarily in the Semi-Evergreen Seasonal Forest along stream bottoms on the southeast slopes of Volcán Santa Marta and in the Lower Montane Rain Forest along the fairly wide logging roads on the southern slopes of Volcán San Martín Tuxtla. The flight is very

slow, weak, and usually between two to six feet above the ground. The butterflies appear to be attracted to patches of *Boehmeria* sp., a plant that is common in disturbed areas within the rain forests. (As stated previously, this same plant is attractive to *Parides arcas mylotes.*) The body fluids of pinched individuals smelled slightly sour.

30. *Appias (Glutophrissa) drusilla poeyi* (Butler)

SPECIMENS: 9 ♂ ♂, 7 ♀ ♀; 500-2,400 feet; 23 April-26 July.

This species is abundant in Pastures, Recently Abandoned Milpas and in open, sunny glades within the Lower Montane Rain Forest. The flight is relatively rapid, erratic, and usually above ten feet of the ground. Adults are attracted to many species of flowering plants.

31. *Leptophobia aripa elodia* (Boisduval)

SPECIMENS: 7 ♂ ♂, 3 ♀ ♀; 1,100-5,200 feet; 6 Feb.-22 Nov.

This pierid is locally common and seen most frequently in and around the village of Ocotal Chico and above the canopy of the Elfin Woodland on Volcán Santa Marta. The flight is rapid, erratic, and usually above six feet of the ground.

32. *Itaballia (Itaballia) demophile calydonia* (Boisduval)

SPECIMENS: 5 ♂ ♂; 150 feet; 23 Aug.

This sulphur is locally common, all five specimens being taken in the *Bursera-Sabal-Orbignya* Associes of the Semi-Evergreen Seasonal Forest. When collected, the butterflies either were flying in shaded areas of the woodland or visiting the flowers of the nettle *Urera elata.* The flight is slightly slower and less erratic than that of most pierids but much like that of *Itaballia viardi* (species number 34). The males are endowed with small, yellowish, dorso-posterior abdominal scent glands that were everted when the butterflies were pinched and which emitted an acrid odor.

33. *Itaballia (Itaballia) pisonis kicaha* (Reakirt)

SPECIMENS: 12 ♂ ♂, 11 ♀ ♀; 0-2,450 feet; 15 July-17 Nov.

This dimorphic species is locally abundant in the Lower Montane Rain Forest (especially near Coyame) and Swamp Forest. The males have a rather slow flight that usually is between five and ten feet of the ground (similar to the flight of *I. demophile* and slower than that of *I. viardi,* species number 34). The females' flight is very slow, weak, and usually within two feet of the ground, a behavior that is very similar to that of the unrelated ithomiid *Aeria pacifica.* Indeed, I occasionally collected *I. pisonis, I. viardi,* and *A. pacifica* within an area of ten to 15 square feet and until the specimens were removed from the

net, I was unable to distinguish between the species. Of the 23 specimens collected, two males and one female exhibit a slight tendency towards the coloration of the opposite sex.

34. *Itaballia (Pieriballia) viardi viardi* (Boisduval)

SPECIMENS: 12 ♂ ♂, 9 ♀ ♀; 150-2,450 feet; 14 July-24 Sept.

This dimorphic species is locally abundant in the Lower Montane Rain Forest (especially in the vicinity of Coyame) and the *Bursera-Sabal-Orbignya* Associes of the Semi-Evergreen Seasonal Forest. Males have a fairly rapid and erratic flight that is similar to that of *I. demophile* and which usually is restricted to an area slightly beneath the forest canopy. However, the males occasionally descend to within five or ten feet of the ground in sunny glades. Females have a very slow and weak flight that very rarely is above two feet of the forest floor. As stated previously, this behavior is very similar to that of the sympatric ithomiid *Aeria pacifica*. Both males and females have abdominal scent glands that produce an acrid odor.

35. *Ascia (Ascia) monuste monuste* (Linnaeus)

SPECIMENS: 13 ♂ ♂, 8 ♀ ♀; 0-2,600 feet; 14 June-4 Sept.

The great southern white is abundant in Recently Abandoned Milpas, Pastures, the Littoral Woodland, and along road sides and most other relatively open, sunny areas (even in sunny glades within the Lower Montane Rain Forest). The flight is very rapid, erratic, and usually in excess of six feet of the ground. Adults visit the flowers of numerous plants.

36. *Melete isandra* (Boisduval)

SPECIMENS: 9 ♂ ♂, 7 ♀ ♀; 0-1,900 feet; 25 March-23 Oct.

M. isandra is locally abundant in Pastures and the small patches of Semi-Evergreen Seasonal Forest bordering Lago Catemaco, the Littoral Woodland, and in and around the village of Ocotal Chico, the butterflies being attracted to the cultivated flowers growing in the villagers' gardens. The flight is slightly slower than that of most medium to large pierids and usually between three and ten feet of the ground.

SUBFAMILY Coliadinae

37. *Colias (Zerene) cesonia* (Stoll)

SPECIMENS: 8 ♂ ♂, 9 ♀ ♀; 0-2,300 feet; 27 June-19 Sept.

The dog-face is abundant in Recently Abandoned Milpas and Pastures, and along sunny road sides in the vicinity of Lago Catemaco and common in most open, sunny areas in other sec-

tions of the Sierra. The flight is typical of most sulfurs and the butterflies very frequently visit flowers, particularly the composite *Melampodium kunthianum,* and mud puddles.

38. *Anteos clorinde* (Godart)

SPECIMENS: 8 ♂ ♂, 1 ♀; 700-1,100 feet; 20 June-30 Sept.

The clorinde is common in most open, sunny areas throughout the Sierra regardless of plant formation. The butterflies are attracted to moist earth. In the pastures surrounding Lago Catemaco I observed females ovipositing on *Cassia spectabilis.* The flight is rapid with powerful wing beats and usually in excess of five feet of the ground.

39. *Anteos maerula* (Fabricius)

SPECIMENS: 10 ♂ ♂, 1 ♀; 0-1,900 feet; 29 March-14 Sept.

The maerula is common throughout the Sierra in most open, sunny areas regardless of plant formation. The butterflies have behavioral characteristics similar to those of *A. clorinde.*

40. *Phoebis (Phoebis) sennae marcellina* (Cramer)

SPECIMENS: 21 ♂ ♂, 15 ♀ ♀; 0-1,500 feet; 8 June-18 Nov.

The cloudless sulphur is the most abundant species of large pierid in the Sierra and is found in practically all open, sunny regions regardless of plant formation. The flight is characteristic of most members of the genus—fast, erratic, and usually above six feet of the ground. The butterflies are attracted to mud puddles and numerous species of flowering plants. In the pastures surrounding Lago Catemaco I observed females ovipositing on *Cassia occidentalis.*

41. *Phoebis (Phoebis) philea* (Johansson)

SPECIMENS: 7 ♂ ♂, 11 ♀ ♀; 0-2,700 feet; 8 Feb.-13 Nov.

The orange-barred sulphur is common in practically all open, sunny sections of the range regardless of plant formation. The flight is similar to that of most members of the genus. The larval food plant is *Cassia occidentalis.*

42. *Phoebis (Phoebis) argante* (Fabricius)

SPECIMENS: 8 ♂ ♂, 16 ♀ ♀; 0-1,900 feet; 22 June-18 Nov.

The argante sulphur is abundant in the Littoral Woodland and in Recently Abandoned Milpas and Pastures in the vicinity of Lago Catemaco. The flight is similar to that of most species of *Phoebis.* The butterflies are attracted to mud puddles and to the flowers of a variety of plants.

43. *Phoebis (Phoebis) agarithe maxima* (Neumoegen)

SPECIMENS: 5 ♂ ♂, 3 ♀ ♀; 0-2,450 feet; 14 Aug.-24 Oct.

The large orange sulphur is abundant in the Littoral Wood-

land, Deciduous Woodland (including the *Pinus-Quercus* Associes), and Recently Abandoned Milpas and Pastures above elevations of 1,400 feet on the Santa Marta massif. Thus, this species is sympatric with the sibling *P. argante* over part of the Sierra (the coast) and allopatric with it over other sections, *P. argante* occupying the Catemaco Basin and *P. agarithe* occupying the slightly higher elevations of the range (particularly the Santa Marta massif).

44. *Phoebis (Phoebis) intermedia* Butler

SPECIMENS: 2 ♂ ♂; 2 mi. NE Catemaco, 1,100 feet, 3 Aug. 1962, 1 ♂; 1.25 mi. NE Ocotal Chico, 2,700 feet, 28 July 1963, 1 ♂.

This tailed sulphur is rare in the Sierra; one male was collected at a water hole asssemblage of pierids on the shore of Lago Catemaco and the other as it flew over a sunny knoll in the *Pinus-Quercus* Associes of the Deciduous Woodland. The flight is similar to that of other species of *Phoebis*.

45. *Phoebis (Rhabdodryas) trite* (Linnaeus)

SPECIMENS: 2 ♂ ♂; 0, 1,100 feet; 26 June, 15 Aug.

Although only two specimens were collected, this species is locally common in the Sierra, being found principally at mud puddle assemblages of pierids along sunny road sides. The flight is rapid and erratic.

46. *Phoebis (Aphrissa) statira jada* (Butler)

SPECIMENS: 4 ♂ ♂, 1 ♀; 0-1,100 feet; 8 June-14 Sept.

This species is locally common and found most frequently at mud puddle assemblages of pierids along sunny road sides. The flight is similar to that of other species of *Phoebis*.

47. *Eurema (Eurema) albula* (Cramer)

SPECIMENS: 8 ♂ ♂, 4 ♀ ♀; 75-2,600 feet; 20 June-25 Oct.

This pierid is abundant along the margins of all forests and woodlands throughout the Sierra as well as in most pastures and fields containing some tree cover. The flight is rather slow, weak, and usually never near the ground—a characteristic flight of most species of *Eurema*. In pastures surrounding Lago Catemaco, I observed females ovipositing on *Picramnia andicola*, a very common small bush.

48. *Eurema (Eurema) daira daira* (Godart)

SPECIMENS: 20 ♂ ♂, 19 ♀ ♀; 350-2,500 feet; 8 Feb.-19 Nov.

The fairy yellow is abundant in practically all open, sunny areas throughout the Sierra. The flight is the same as that of most members of the genus.

49. *Eurema (Eurema) boisduvaliana* Felder & Felder

SPECIMENS: 10 ♂ ♂, 4 ♀ ♀; 1,100-3,400 feet; 20 Feb.-30 Oct.

Boisduval's sulfur is common in Pastures, Recently Abandoned Milpas, and along sunny road sides in the vicinity of Lago Catemaco and Ocotal Chico. The flight is typical of most members of the genus. The larval food plant is *Cassia occidentalis*. One of the four females collected is white instead of yellow.

50. *Eurema (Eurema) xanthochlora* (Kollar)

SPECIMENS: 14 ♂ ♂, 13 ♀ ♀; 500-4,100 feet; 17 March-29 Oct.

This pierid is locally common, being found principally along the margins of and just within the Lower Montane Rain Forest and the Semi-Evergreen Seasonal Forest. The flight is similar to that of most members of the genus. Sixteen of the 27 specimens collected were reared from chrysalids found on *Cassia fruticosa*, a small forest tree.

51. *Eurema (Eurema) mexicana* (Boisduval)

SPECIMENS: 9 ♂ ♂, 4 ♀ ♀; 500-2,700 feet; 9 March-16 Aug.

The Mexican sulphur is common in most open, sunny areas in the Sierra regardless of plant formation. The behavior is characteristic of most species of *Eurema*.

52. *Eurema (Eurema) salome* (Felder)

SPECIMENS: 1 ♂; Peak Volcán Santa Marta, 5,100 feet, 5 April.

The salome sulphur is rare, the single male being taken as it flew over the eastern rim of the crater of Volcán Santa Marta above the canopy of the Elfin Woodland. The wind was fairly strong at the time and so the possibility exists that the specimen was carried up the slopes of the volcano from lower elevations and perhaps even from the coast since *E. salome* usually is not considered a forest inhabitor.

53. *Eurema (Pyrisitia) proterpia* (Fabricius)

SPECIMENS: 10 ♂ ♂, 3 ♀ ♀; 0-2,600 feet; 9 March-23 Oct.

The proterpia orange is abundant in most open, sunny areas throughout the Sierra regardless of plant formation. The behavior is similar to that of most other species of *Eurema*. Three specimens collected in the early spring have the tails on the hind wings elongated, the black scales on the wing veins reduced, and the ventral hind wings mottled orange. This morphotype is named form *gundlachia* (Poey) and was until recently considered a distinct species.

54. *Eurema (Pyrisitia) lisa* Boisduval & Le Conte

SPECIMENS: 7 ♂ ♂, 9 ♀ ♀; 1,100-2,900 feet; 25 June-13 Nov.

The little sulphur is abundant in most open, sunny areas in the Sierra irrespective of plant formation, but especially in the Deciduous Woodland (including the *Pinus-Quercus* Associes). The behavior is typical for most members of the genus.

55. *Eurema (Pyrisitia) nise nelphe* (Felder)

SPECIMENS: 22 ♂ ♂, 9 ♀ ♀; 500-2,900 feet; 6 Feb.-25 Oct.

The nise sulphur is abundant (even more so than the sibling *E. lisa*) in most open, sunny areas throughout the range. Within the oak and pine-oak forests *E. nise nelphe* is the most common butterfly. The behavior is the same as that of most members of the genus.

56. *Eurema (Pyrisitia) dina westwoodi* (Boisduval)

SPECIMENS: 6 ♂ ♂, 8 ♀ ♀; 700-2,300 feet; 23 April-2 Aug.

This sulphur is abundant along the margins of the Lower Montane Rain Forest and Semi-Evergreen Seasonal Forest and in Pastures and along Hedgerows, particularly in the vicinity of Lago Catemaco. The butterflies seem to prefer partially shaded habitats. The larval food plant is *Picramnia andicola,* the same as that of *E. albula.* The flight is typical of most species in the genus.

57. *Eurema (Abaeis) nicippe* (Cramer)

SPECIMENS: 5 ♂ ♂, 2 ♀ ♀; 1,100, 1,900 feet; 8 June-21 July.

The sleepy orange is common in most open, sunny areas throughout the range, especially in Pastures and Recently Abandoned Milpas in the vicinity of Lago Catemaco. The larval food plant is *Cassia occidentalis.* The flight is slightly more rapid than that of most members of the genus.

58. *Nathalis iole* Boisduval

SPECIMENS: 4 ♂ ♂, 3 ♀ ♀; 1,100-2,100 feet; 21 June-14 Nov.

The dainty sulphur is locally common, being found principally in Recently Abandoned Milpas on the southern slopes of Volcán San Martín Tuxtla (elevation approximately 2,100 feet). The flight is more rapid and erratic than that of *Eurema* spp.

FAMILY ITHOMIIDAE

SUBFAMILY Ithomiinae

All of the 20 species of this subfamily recorded from the Sierra share several ecological and ethological characteristics. First, they all are shade-loving forest inhabitants, some species preferring relatively small patches of secondary forest and others the dark, dank, inner-most recesses of the mature montane forests. However, on cloudy days individuals often leave the forest cover and wander out into the fields and onto the road sides in the vicinity of the forests. Within the forests the species usually are rather colonial in that they are found in rather restricted areas instead of being scattered randomly throughout the plant formation. In addition, these colonies are non-specific, i.e., most of the species found within the given formation usually are found within the colony or "ithomiid assemblage" as it might better be termed. For the most part these "assemblages" are located in the dampest regions of the forest, e.g., in ravines, along streams, or near springs. Second, they all seem to be attracted to the blossoms of a few, non-related plants. These are *Tournefortia glabra* (a small, white-flowering tree that is locally common along the borders of the montane forests), *Eupatorium macrophyllum* (a purple-flowering annual or biennial that is common throughout the Sierra along the margins of and along the trails in the montane forests), and *Psychotria padifolia* (a small, white-flowering bush that is locally common within the interiors of the montane forests. When these plants are in blossom (summer and fall), I never encountered a plant that did not have a considerable number of ithomiids visiting it. In fact, most plants usually have several dozens of butterflies. (Ithomiids never were observed to be attracted to anything other than these four species of plants.) Third, the 20 species can be divided into two categories using flight behavior as a criterion. The first group includes the relatively small species with transparent wings *(Ithomia leila, I. patilla, Oleria zea, O. paula, Episcada artena, Pteronymia cottyto, Greta nero, G. oto, G. anetta,* and *Hypoleria cassotis)* and the yellow and black *Aeria pacifica.* These species fly very slowly with very weak wing beats; the flight usually is not over two to three feet above the forest floor. The second

group includes the slightly larger and the large species, all of which are black and orange and which may be termed the "tiger complex" *(Tithorea harmonia, Melinaea lilis, Mechanitis scada virginiana, Napeogenes tolosa,* and *Dircenna klugi).* These species have slightly more powerful flights that usually are between six and ten feet of the ground.

TRIBE Tithoreini

59. *Tithorea harmonia salvadoris* Staudinger

SPECIMENS: 7 ♂ ♂, 9 ♀ ♀; 0-1,400 feet; 9 May-7 Aug.

This species is locally abundant, the primary habitat being the Swamp Forest bordering Río Yougualtajapan on the coast; however, several localized colonies exist along other smaller streams and rivers on the Santa Marta massif (principally Río Guasuntlan below Soteapan).

TRIBE Melinaeini

60. *Melinaea lilis imitata* Bates

SPECIMENS: 16 ♂ ♂, 12 ♀ ♀; 0-3,200 feet; 10 June-17 Nov.

This ithomiid is locally common in the Lower Montane Rain Forest and Montane Rain Forest.

TRIBE Mechanitini

61. *Mechanitis polymnia lycidice* Bates

SPECIMENS: 20 ♂ ♂, 19 ♀ ♀; 0-2,700 feet; 25 June-24 Oct.

M. polymnia lycidice and the two sibling species *M. egaensis doryssus* and *M. menapis saturata* are locally abundant and sympatric over most of the Sierra (see *M. menapis saturata* for possible exception), being found in the Lower Montane Rain Forest, Montane Rain Forest, Semi-Evergreen Seasonal Forest including the *Bursera-Sabal-Orbignya* Associes, and Swamp Forest.

62. *Mechanitis egaensis doryssus* Bates

SPECIMENS: 19 ♂ ♂, 9 ♀ ♀; 0-2,450 feet; 1 July-17 Nov.

This species is locally abundant in the Lower Montane Rain Forest, Montane Rain Forest, Semi-Evergreen Seasonal Forest including the *Bursera-Sabal-Orbignya* Associes, and Swamp Forest.

63. *Mechanitis menapis saturata* Godman

SPECIMENS: 6 ♂ ♂, 9 ♀ ♀; 75-3,100 feet; 17 March-5 Sept.

This species is locally common and is found in the Lower Montane Rain Forest, Montane Rain Forest, Semi-Evergreen Seasonal Forest, and Swamp Forest. The butterflies seem to prefer the mature montane forests over the more disturbed and

less dense ones, as for example in the Catemaco Basin. However, the possibility exists that the species simply was overlooked at many localities because of its close resemblance to the two sibling species.

TRIBE Napeogenini

64. *Hypothyris lycaste dionaea* Hewiston

SPECIMENS: 19♂♂, 5♀♀; 0-3,400 feet; 17 June-17 Nov.

This ithomiid is locally abundant in the Lower Montane Rain Forest, Montane Rain Forest, Semi-Evergreen Seasonal Forest, and Swamp Forest. The butterflies seem to prefer the less disturbed forests.

65. *Napeogenes tolosa* (Hewitson)

SPECIMENS: 14♂♂, 14♀♀; 0-3,000 feet; 18 March-17 Nov.

Napeogenes tolosa is locally abundant in the Lower Montane Rain Forest, Montane Rain Forest, Semi-Evergreen Seasonal Forest including the *Bursera-Sabal-Orbignya* Associes, and Swamp Forest. The butterflies appear to prefer the more mature forests.

TRIBE Ithomiini

66. *Ithomia leila* Hewitson

SPECIMENS: 22♂♂, 1♀; 1,100-4,450 feet; 25 June-30 Oct.

This species is locally common in the Lower Montane Rain Forest, Montane Rain Forest, Montane Thicket, and Semi-Evergreen Seasonal Forest. The butterflies seem to prefer mature forests at medium and high elevations.

67. *Ithomia patilla* Staudinger

SPECIMENS: 25♂♂, 5♀♀; 0-2,700 feet; 22 June-17 Nov.

I. patilla is locally abundant in the Lower Montane Rain Forest, Montane Rain Forest, Semi-Evergreen Seasonal Forest, and Swamp Forest. The species seems to prefer relatively undisturbed forests at low and medium elevations.

TRIBE Oleriini

68. *Hyposcada virginiana virginiana* (Hewitson)

SPECIMENS: 2♂♂, 1♀; 9 mi. ENE Sontecomapan, 0 feet, 17 Nov. 1962, 1♂: 5 mi. E Cuetzalapan, 2,450 feet, 4 Sept. 1962, 1♂: 4.5 mi. ESE Cuetzalapan, 2,500 feet, 5 Sept. 1962, 1♀.

This species is rare; all three specimens were collected in the Lower Montane Rain Forest.

69. *Oleria zea* (Hewitson)

SPECIMENS: 6♂♂, 2♀♀; 4,200-4,800 feet; 7 April-16 July.

O. zea is common only in several ravines in the Montane Thicket on Volcán Santa Marta.

70. *Oleria paula* (Weymer)

SPECIMENS: 13 ♂ ♂, 17 ♀ ♀; 0-4,300 feet; 11 Feb.-17 Nov.

This ithomiid is locally abundant in the Lower Montane Rain Forest, Montane Rain Forest, Montane Thicket, Semi-Evergreen Seasonal Forest including the *Bursera-Sabal-Orbignya* Associes, and Swamp Forest.

71. *Aeria pacifica* Godman & Salvin

SPECIMENS: 11 ♂ ♂, 8 ♀ ♀; 0-3,000 feet; 17 March-5 Oct.

This yellow and black ithomiid is locally common in the Lower Montane Rain Forest, Semi-Evergreen Seasonal Forest, and Swamp Forest. The species seems to prefer relatively undisturbed forests.

TRIBE Dircennini

72. *Dircenna klugi* (Geyer)

SPECIMENS: 17 ♂ ♂, 20 ♀ ♀; 0-4,200 feet; 17 March-17 Nov.

This large and relatively transparent species is abundant in the Lower Montane Rain Forest, Montane Rain Forest, Semi-Evergreen Seasonal Forest, and Swamp Forest.

73. *Episcada artena* (Hewitson)

SPECIMENS: 11 ♂ ♂, 12 ♀ ♀; 1,650-4,600 feet; 20 June-29 Oct.

This species is locally common in the Lower Montane Rain Forest, Montane Rain Forest including the *Liquidambar-Quercus* Associes, Montane Thicket, Semi-Evergreen Seasonal Forest, and Hedgerows. The butterflies seem to prefer the less disturbed forests at medium and high elevations.

74. *Pteronymia cottyto* (Guérin)

SPECIMENS: 16 ♂ ♂, 11 ♀ ♀; 75-5,100 feet; 30 March-24 Oct.

P. cottyto is one of the most abundant and the most widespread ithomiid in the Sierra; the butterflies are found in practically all shaded and semi-shaded areas throughout the range regardless of plant formation.

TRIBE Godyridini

75. *Greta nero* (Hewitson)

SPECIMENS: 13 ♂ ♂, 20 ♀ ♀; 700-4,450 feet; 7 April-29 Oct.

This species is one of the most abundant ithomiids in the Sierra and is found in the Lower Montane Rain Forest, Montane Rain Forest, Montane Thicket, and the Semi-Evergreen Seasonal Forest.

76. *Greta oto* (Hewitson)

SPECIMENS: 16 ♂ ♂, 20 ♀ ♀; 1,100-4,300 feet; 17 March-13 Sept.

Greta oto is one of the most abundant species of ithomiid in the range and is found in the Lower Montane Rain Forest, Montane Rain Forest including the *Liquidambar-Quercus* Associes, Montane Thicket, and Semi-Evergreen Seasonal Forest.

77. *Greta anetta* (Guérin)

SPECIMENS: 24 ♂ ♂, 15 ♀ ♀; 2,900-4,750 feet; 15 June-25 Oct.

This species is locally abundant in the Montane Rain Forest, Montane Thicket, and Elfin Woodland.

78. *Hypoleria cassotis* (Bates)

SPECIMENS: 14 ♂ ♂, 8 ♀ ♀; 0-2,900 feet; 3 July-30 Oct.

This ithomiid is locally common in the Lower Montane Rain Forest, Semi-Evergreen Seasonal Forest, and Swamp Forest. The butterflies seem to prefer dank areas more than the other species in the family.

FAMILY DANAIDAE

SUBFAMILY Danainae

79. *Danaus (Danaus) plexippus plexippus* (Linnaeus)

SPECIMENS: 3 ♂ ♂, 3 ♀ ♀; 1,100-2,200 feet; 8 Feb.-26 Sept.

The monarch is common in most open, sunny areas only during fall and winter. The butterflies are attracted to the orange blossoms of *Asclepias tuberosa*, a plant that is abundant in the fields and pastures surrounding Lago Catemaco. The butterflies have a soaring flight.

80. *Danaus (Tasitia) gilippus strigosus* (Bates)

SPECIMENS: 8 ♂ ♂, 8 ♀ ♀; 0-1,900 feet; 19 May-23 Oct.

The queen is common in most open, sunny areas, but principally in Recently Abandoned Milpas and Pastures. Adults are attracted to the blossoms of *Asclepias tuberosa, A. woodsoniana, Heliotropium indicum,* and *Lantana camara,* all of which are common field plants. The butterflies have a soaring flight that usually is somewhat lower than that of *D. p. plexippus.*

81. *Danaus (Tasitia) eresimus montezuma* Talbot

SPECIMENS: 3 ♂ ♂, 2 ♀ ♀; 1,100, 2,200 feet; 21 Aug.-15 Oct.

The eresimus is uncommon and found in Recently Aban-

doned Milpas and Pastures. All specimens were taken as they fed on flowering plants—*Cordia spinescens* and *Bidens pilosa* var. *bimucronata*. The flight is similar to that of the queen.

SUBFAMILY Lycoreinae

82. *Lycorea ceres atergatis* (Doubleday)

SPECIMENS: 17 ♂ ♂, 10 ♀ ♀; 0-2,450 feet; 27 June-23 Oct.

This species is locally common, being found along the margins of and just within the Lower Montane Rain Forest, Semi-Evergreen Seasonal Forest, and Swamp Forest; in addition, the species is found in Pastures and Recently Abandoned Milpas when forest cover is near. The flight of this unusually marked danaid is slower than that of the other three members of the family but similar to that of the larger ithomiids ("tiger complex") and the heliconians. Adults are attracted to the purple flowers of *Heliotropium indicum*, a common plant in the fields and pastures throughout the Sierra. In addition, adults were collected on the blossoms of *Cordia spinescens*, *Eupatorium macrophyllum*, and *E. pittieri*. As described previously, the latter two plant species are also attractive to the ithomiids. Indeed, on several occasions I observed *L. ceres atergatis* and several species of ithomiids feeding on a single flower head of *E. macrophyllum*. Thus, in addition to resembling several of the ithomiids, heliconians, and pierids in morphology and wing coloration, *L. ceres atergatis* resembles those species also in ecology and ethology.

FAMILY SATYRIDAE

SUBFAMILY Satyrinae

83. *Pierella luna heracles* Boisduval

SPECIMENS: 6 ♂ ♂, 1 ♀; 800-2,300 feet; 20 June-27 Aug.

This satyrid is common in most of the forested regions, particularly in the Lower Montane Rain Forest, Montane Rain Forest including the *Liquidambar-Quercus* Associes, and Semi-Evergreen Seasonal Forest including the *Bursera-Sabal-Orbigyna* Associes. The butterflies seem to prefer flying up and down the forest trails; very few individuals were seen off trails. The flight is slow, usually never more than one foot above the ground, and

of short duration—the butterflies alighting mainly on fallen leaves.

84. *Taygetis mermeria excauata* Butler

SPECIMENS: 3 ♂ ♂; 2,000, 3,000 feet; 12 April, 31 May.

This large species is uncommon and local; all three specimens were collected as they rested on the ground in coffee fincas in partially cleared Lower Montane Rain Forest on the Santa Marta massif. All specimens represent the morphotype that has been named form *tenebrosus* Blanchard.

85. *Taygetis virgilia* (Cramer)

SPECIMENS: 3 ♂ ♂, 1 ♀; 1,100, 1,950 feet; 29 June-12 Nov.

This satyrid is uncommon and found in the Semi-Evergreen Seasonal Forest and the *Pinus-Quercus* Associes of the Deciduous Woodland. The flight is relatively slow, very close to the ground, and usually of short duration. Although the butterflies are found most frequently along trails, they do not adhere to these as tenaciously as does *Pierella luna*.

86. *Taygetis andromeda* (Cramer)

SPECIMENS: 10 ♂ ♂, 3 ♀ ♀; 0-2,900 feet; 17 March-18 Nov.

T. andromeda is common in the Lower Montane Rain Forest, Montane Rain Forest including the *Liquidambar-Quercus* Associes, Semi-Evergreen Seasonal Forest, and Swamp Forest. The species is the most common satyrid in the mature rain forests. The behavior is similar to that of *T. virgilia*.

87. *Taygetis keneza* Butler

SPECIMENS: 17 ♂ ♂, 6 ♀ ♀; 800-2,400 feet; 20 June-19 Nov.

This species is common in the Lower Montane Rain Forest and Semi-Evergreen Seasonal Forest. The behavior is similar to that of *T. virgilia*.

88. *Taygetis kerea* Butler

SPECIMENS: 5 ♂ ♂, 3 ♀ ♀; 1 mi. SSE Ocotal Chico, 1,800 feet, 23 Oct. 1962, 2 ♂ ♂, 2 ♀ ♀: Ocotal Chico, 1,900 feet, 24 Oct. 1962, 1 ♂: 1 mi. ENE Ocotal Chico, 2,100 feet, 23 Oct. 1962, 2 ♂ ♂; 24 Oct. 1962, 1 ♀.

This species is locally common; all specimens were taken in the Deciduous Woodland and the *Pinus-Quercus* Associes on several ridge slopes where the grass was between one and three feet in height. The behavior is similar to that of *T. virgilia*. *Taygetis kerea* was recorded from Mexico previously only from Chiapas and the "Sierra Madre del Sur" (Hoffmann, 1940).

89. *Euptychia gemma freemani* (Stalings & Turner)

SPECIMENS: 19 ♂ ♂, 11 ♀ ♀; 350-2,700 feet; 8 Feb.-29 Oct.

The gemmed satyr is abundant in the grassy areas in the Savanna and the Deciduous Woodland (including the *Pinus-Quercus* Associes), on the Santa Marta massif. However, although the species is confined almost exclusively to these formations, several individuals were collected in the northwestern section of the range. Two were collected in grassy fields on ridges and one on the lawn of the Hotel Playa Azul. This last locale seems to be foreign to the species and I think that the specimen's occurrence there is the result of the previous day's weather condition (high northeast winds). Thus, the possibility exists that the butterfly is a stray blown down from higher and more suitable habitats.

90. *Euptychia hesione* (Sulz)

SPECIMENS, 11 ♂ ♂, 1 ♀; 0-2,100 feet; 8 Feb.-23 Oct.

This satyrid is abundant in the Semi-Evergreen Seasonal Forest including the *Bursera-Sabal-Orbigyna* Associes, Swamp Forest, Lower Montane Rain Forest, and along Hedgerows. The species seems to prefer relatively disturbed forests. The flight is characteristic of most members of the genus—rather slow, usually between one and two feet of the ground, and of short duration, the butterflies alighting frequently on vegetation.

91. *Euptychia metaleuca* (Boisduval)

SPECIMENS: 5 ♂ ♂, 4 ♀ ♀; 0-3,000 feet; 9 Feb.-5 Sept.

This satyrid is locally common in the Lower Montane Rain Forest, Montane Rain Forest, Semi-Evergreen Seasonal Forest, and Swamp Forest. The butterflies seem to prefer relatively undisturbed forests. The behavior is similar to that of most other members of the genus.

92. *Euptychia mollina* Hübner

SPECIMENS: 6 ♂ ♂, 8 ♀ ♀; 900-4,100 feet; 8 Feb.-5 Oct.

E. mollina is common throughout most of the Sierra and found principally in the Semi-Evergreen Seasonal Forest, Deciduous Woodland including the *Pinus-Quercus* Associes, Lower Montane Rain Forest, and along Hedgerows. The flight usually is approximately three to four feet above the ground and hence slightly higher than that of most species of *Euptychia*.

93. *Euptychia labe* Butler

SPECIMENS: 3 ♂ ♂, 5 ♀ ♀; 500-3,300 feet; 26 May-25 Oct.

This species is local and uncommon, being found in the Semi-Evergreen Seasonal Forest, Lower Montane Rain Forest, and Montane Rain Forest including the *Liquidambar-Quercus* Associes. The flight is typical of most members of the genus.

94. *Euptychia similis* Butler

SPECIMENS: 2♂♂, 1♀; 1 mi. NNE Ocotal Chico, 2,100 feet, 14 June 1963, 2♂♂: 2 mi. NE Catemaco, 1,100 feet, 24 June 1962, 1♀.

This species is rare, although because of its close similarity to *E. themis* and *E. undina*, both of which may be only morphotypes of *E. similis*, additional butterflies may have been overlooked. The two males were collected along a wide trail in the *Liquidambar-Quercus* Associes of the Montane Rain Forest and the single female along the margin of a section of the Semi-Evergreen Seasonal Forest bordering Lago Catemaco. The behavior is similar to that of most members of the genus.

95. *Euptychia themis* Butler

SPECIMENS: 19♂♂, 1♀; 0-2,700 feet; 20 Feb.-13 Nov.

This satyrid is common in and along the margins of all forests except the Montane Thicket and Elfin Woodland. The behavior is typical of most members of the genus.

96. *Euptychia undina* Butler

SPECIMENS: 6♂♂, 9♀♀; 150-3,000 feet; 10 June-10 Nov.

E. undina is common and found in and along the margins of the Lower Montane Rain Forest, Semi-Evergreen Seasonal Forest, Montane Rain Forest including the *Liquidambar-Quercus* Associes, and Swamp Forest. Although the species is sympatric with *E. themis* over most of the Sierra, *E. undina* seems to prefer less disturbed areas than *E. themis*.

97. *Euptychia disaffecta* Butler & Druce

SPECIMENS: 19♂♂, 6♀♀; 750-3,400 feet; 8 Feb.-30 Oct.

This species is locally abundant and found principally in grass fields within the *Liquidambar-Quercus* Associes of the Montane Rain Forest. The behavior is typical of most species of *Euptychia*.

98. *Euptychia hermes sosybius* (Fabricius)

SPECIMENS: 15♂♂, 5♀♀; 1,100-2,200 feet; 6 Feb.-13 Nov.

The Carolina satyr is the most abundant and most widely distributed satyrid in the Sierra; the butterflies are found in all shaded and partially shaded areas except the interiors of the montane forests. The behavior is similar to that of most members of the genus.

99. *Euptychia gigas* Butler

SPECIMENS: 8♂♂, 8♀♀; 800-2,300 feet; 23 Oct.-20 Nov.

This satyrid is locally common, being found in the Deciduous Woodland (including the *Pinus-Quercus* Associes) and several

small patches of Semi-Evergreen Seasonal Forest fringing Lago Catemaco. The butterflies were collected only during the fall months. Within the oak and pine-oak communities, *E. gigas* was taken most frequently in tall grassy areas on the slopes of several ridges.

100. *Euptychia libye* (Linnaeus)

SPECIMENS: 9♂♂, 4♀♀; 0-2,800 feet; 11 Feb.-19 Nov.

E. libye is common in most forests, particularly the Semi-Evergreen Seasonal Forest, Lower Montane Rain Forest, Swamp Forest, and the Deciduous Woodland (including the *Pinus-Quercus* Associes). The flight is similar to that of most members of the genus.

101. *Euptychia glaucina* Bates

SPECIMENS: 1♂, 6♀♀; 150-2,900 feet; 23 June-24 Oct.

This satyrid is uncommon and found primarily in coffee fincas within the Lower Montane Rain Forest and Semi-Evergreen Seasonal Forest. The behavior is typical of the group.

102. *Euptychia sericella* Bates

SPECIMENS: 17♂♂, 2♀♀; 1,800-2,700 feet; 13 April-25 Oct.

This iridescent species is locally abundant in the Semi-Evergreen Seasonal Forest and the *Liquidambar-Quercus* Associes of the Montane Rain Forest. Within these formations the butterflies are restricted to the relatively open, tall grassy areas. The behavior is typical of most *Euptychia* spp.

103. *Euptychia* sp. near *alcinoe* Felder

SPECIMENS: 6♂♂; 1,100, 1,800 feet; 30 June-13 Nov.

This species, which thus far remains undertermined because of the specimens' poor condition, is local and uncommon; all specimens were collected in disturbed sections of Semi-Evergreen Seasonal Forest. The behavior is similar to that of other species in the genus.

104. *Pedaliodes pisonia circumducta* (Thieme)

SPECIMENS: 5♂♂, 2♀♀; 4,300-5,000 feet; 5 April-3 Aug.

This species is locally common in the Elfin Woodland on Volcán Santa Marta. The butterflies occur in the small, restricted grassy and shrubby areas that exist on several of the upper ridges where sunlight is able to reach the ground. The flight is slightly faster and more powerful than that of most species in the family.

105. *Dioriste tauropolis* (Doubleday & Hewitson)

SPECIMENS: 20♂♂; 2,400-5,400 feet; 23 Feb.-30 Oct.

This brightly colored satyrid is locally abundant in the Montane Thicket and Elfin Woodland. The butterflies were collected most frequently in sunlit patches of forest as they rested on leaves or as they chased one another. The flight is quicker, more erratic, and usually not as low to the ground as that of most satyrids but very similar to that of the pierids *Dismorphia eurydice* and *D. nemesis*, both of which are sympatric with *Dioriste tauropolis*.

SUBFAMILY Brassolinae

106. *Opsiphanes (Opsiphanes) boisduvalii* Westwood & Hewitson

SPECIMEN: 1 ♂; 2 mi. NE Catemaco, 1,100 feet, 5 Oct. 1962.

This species is rare; the single specimen was collected as it imbibed fermenting sap oozing from the trunk of a citrus tree in a pasture near Hotel Playa Azul.

107. *Opsiphanes (Opsiphanes) cassiae castaneus* Stichel

SPECIMENS: 5 ♂ ♂, 8 ♀ ♀; 800, 1,100 feet; 20 March-3 Oct.

This species is common only in Pastures in the Catemaco Basin. The butterflies were collected most frequently as they fed on sap oozing from the trunks of citrus trees. The flight is extremely rapid with powerful wing beats. The androconia on the hind wings and abdomens of males produce a sweetish odor.

108. *Eryphanis aesacus* (Herrich-Schaeffer)

SPECIMENS: 2 ♂ ♂; 2.5 mi. SW Sontecomapan, 800 feet, 16 July 1962, 1 ♂: 2 mi. SW Sontecomapan, 900 feet, 3 Nov. 1962, 1 ♂.

E. aesacus is rare in the Sierra. Both specimens were collected along the margins of the Lower Montane Rain Forest; one was imbibing moisture from a rotting corncob and the other was resting on the trunk of a small tree.

109. *Caligo memnon* (Felder)

SPECIMENS: 8 ♂ ♂, 6 ♀ ♀; 0-1,800 feet; 15 March-20 Nov.

This large species is common in most of the forests at relatively low altitudes, particularly the Semi-Evergreen Seasonal Forest including the *Bursera-Sabal-Orbigyna* Associes, Lower Montane Rain Forest, Swamp Forest, and Littoral Woodland. The butterflies are primarily crepuscular—during the day they rest on tree trunks but at dusk they fly up and down the forest paths and even venture out onto the road sides and into pastures and fields. The flight is rapid, undulating, and usually between

two and six feet of the ground. The androconia on the hind wings and abdomens of males produce a sweet odor.

110. *Caligo uranus* Herrich-Schaeffer

SPECIMENS: 5 ♂ ♂, 2 ♀ ♀; 900-2,800 feet; 7 April-? Nov.

This brilliantly marked *Caligo* is uncommon and found primarily in the Lower Montane Rain Forest and Montane Rain Forest during late summer and fall. The behavior is similar to the related species *C. memnon.*

FAMILY NYMPHALIDAE

SUBFAMILY Amathusiinae

TRIBE Morphini

111. *Morpho theseus justiciae* Salvin & Godman

SPECIMENS: 7 ♂ ♂; 2,450 feet, 4,300 feet; 4-17 April.

This species is abundant in the Montane Rain Forest, Montane Thicket, and Elfin Woodland only during the spring and fall months. Therefore, the species apparently is double brooded with a relatively long life cycle. The butterflies have a slow, undulating flight that usually is above the forest canopy. Individuals rarely entered shaded areas; this behavior also was noted by Welling (1966) in Oaxaca. The majority of the specimens were collected on a sunny, open ridge on the upper slopes of Volcán Santa Marta. The slopes of this ridge are covered with heavy montane rain forest and so the butterflies glided above the canopy up one slope and down the other, crossing the open ridge top in the process. By positioning myself in an inconspicuous place on the crest (the buterflies have a keen sense of sight and usually reverse flight direction when they detect conspicuous movements), I was able to net several individuals as they glided past. The subspecies *justiciae* is represented in the Sierra by an endemic blue form that has been named *schwezeri* Le Moult & Real but which probably should be considered a distinct subspecies because of its geographic isolation.

112. *Morpho polyphemus luna* Butler

SPECIMENS: 26 ♂ ♂, 6 ♀ ♀; 1,600-4,800 feet; 16 July-1 Oct.

This white *Morpho* is abundant in the Elfin Woodland, Montane Thicket, and Montane Rain Forest only in late summer and

fall. The species first appears at the highest elevations in early or mid July. Then as the season progresses, the range is extended so that individuals become more and more common at slightly lower elevations. By September and October the butterflies are seen occasionally at elevations slightly below 2,000 feet, that is, when mature rain forest is present. The flight is similar to that of the preceding species with the exception that *M. polyphemus luna* glides more frequently and does not hesitate to fly beneath the forest canopy (at which times the butterflies often descend to within five or ten feet of the ground).

113. *Morpho peleides montezuma* Guénée

SPECIMENS: 28 ♂ ♂, 1 ♀; 0-5,100 feet; 9 Feb.-19 Oct.

The peleides morpho is common at relatively low elevations and found in or along the margins of all formations except the Montane Thicket and Elfin Woodland. The butterflies seem to prefer sunny trail and glades within relatively disturbed forests. The flight is more rapid than that of the preceding two species and usually between two and five feet of the ground.

SUBFAMILY Acraeinae

TRIBE Acraeini

114. *Actinote leucomelas* (Bates)

SPECIMENS: 3 ♂ ♂, 15 ♀ ♀; 1,100-4,800 feet; 12 March-17 April, 10 Oct.-18 Nov.

Actinote leucomelas is locally and seasonally common, being found along the margins of the Semi-Evergreen Seasonal Forest, Lower Montane Rain Forest, the *Pinus-Quercus* Associes of the Deciduous Woodland, Montane Rain Forest, and Montane Thicket during the spring and fall months. Within the pine-oak forest, the butterflies were collected frequently on the flowers of the composite *Bidens pilosa* var. *bimucronata*. The flight is slow, weak, and usually between 12 and 20 feet of the ground. Larvae were found on *Liabum dimidium*, an uncommon shrub along small streams below the village of Ocotal Chico.

115. *Actinote guatemalena veraecruzis* Jordan

SPECIMENS: 5 ♂ ♂, 13 ♀ ♀; 0-2,700 feet; 10 Feb.-17 May.

This species is common in the Deciduous Woodland and the *Pinus-Quercus* Associes only during the spring months. The butterflies are attracted to the white blossoms of *Vernonia leiocarpa*, a common composite in the pine-oak and oak communities. The flight is relatively slow, weak, and usually between ten and 15 feet above the ground.

(to be continued)